

## CLAIMS:

1       1.       A method for reducing the number of messages to be processed by a control  
2       processor in a load balancer comprising the steps of:

3               receiving a request to establish a TCP connection from a client by a network  
4       processor in said load balancer;

5               establishing said TCP connection with said client via handshake messages  
6       between said network processor and said client;

7               receiving a request message from said client;

8               bundling said request message and information from said handshake messages  
9       involved in establishing said TCP connection by said network processor; and

10              transmitting said bundled message to said control processor by said network  
11       processor.

1       2.       The method as recited in claim 1 further comprising the steps of:

2               identifying a server in a server farm to service said client's request message by  
3       said control processor;

4               bundling said client's request message and a control message by said control  
5       processor; and

6               transmitting said bundled message comprising said client's request message  
7       and said control message to said network processor.

1       3.       The method as recited in claim 2, wherein said server in said server farm is  
2       identified using information extracted from said client's request message.

1       4.       The method as recited in claim 2, wherein said control message comprises  
2       information used to enable said network processor to create entries in a forwarding  
3       table to ensure packets from said client are transmitted to said server and to ensure  
4       packets from said server are transmitted to said client.

1       5.     The method as recited in claim 2, wherein said control message comprises  
2     information to establish a TCP connection between said load balancer and said server.

1       6.     The method as recited in claim 2 further comprising the steps of:  
2             receiving a request to terminate said TCP connection from said server by said  
3     network processor;  
4             facilitating said termination of said connection between said server and said  
5     client;  
6             bundling information regarding a series of closed connections by said network  
7     processor; and  
8             transmitting said bundled message regarding said series of closed connections  
9     to said control processor by said network processor.

1       7.     The method as recited in claim 6 further comprising the step of:  
2             extracting information from said bundled message regarding said series of  
3     closed connections by said control processor.

1       8.     A computer program product embodied in a machine readable medium for  
2     reducing the number of messages to be processed by a control processor in a load  
3     balancer comprising the programming steps of:

4             receiving a request to establish a TCP connection from a client by a network  
5     processor in said load balancer;

6             establishing said TCP connection with said client via handshake messages  
7     between said network processor and said client;

8             receiving a request message from said client;

9             bundling said request message and information from said handshake messages  
10    involved in establishing said TCP connection by said network processor; and

11            transmitting said bundled message to said control processor by said network  
12    processor.

1       9.     The computer program product as recited in claim 8 further comprising the  
2     programming steps of:

3             identifying a server in a server farm to service said client's request message by  
4     said control processor;

5             bundling said client's request message and a control message by said control  
6     processor; and

7             transmitting said bundled message comprising said client's request message  
8     and said control message to said network processor.

1       10.    The computer program product as recited in claim 9, wherein said server in  
2     said server farm is identified using information extracted from said client's request  
3     message.

1       11.    The computer program product as recited in claim 9, wherein said control  
2     message comprises information used to enable said network processor to create  
3     entries in a forwarding table to ensure packets from said client are transmitted to said  
4     server and to ensure packets from said server are transmitted to said client.

1       12.     The computer program product as recited in claim 9, wherein said control  
2       message comprises information to establish a TCP connection between said load  
3       balancer and said server.

1       13.     The computer program product as recited in claim 9 further comprising the  
2       programming steps of:  
3             receiving a request to terminate said TCP connection from said server by said  
4       network processor;  
5             facilitating said termination of said connection between said server and said  
6       client;  
7             bundling information regarding a series of closed connections by said network  
8       processor; and  
9             transmitting said bundled message regarding said series of closed connections  
10       to said control processor by said network processor.

1       14.     The computer program product as recited in claim 13 further comprising the  
2       programming step of:  
3             extracting information from said bundled message regarding said series of  
4       closed connections by said control processor.

1       15.     A load balancer, comprising:  
2             a network processor, wherein said network processor is configured to process  
3       fast path packets;  
4             a control processor coupled to said network processor, wherein said control  
5       processor is configured to process slow path packets; and  
6             a memory unit coupled to said control processor and said network processor,  
7       wherein said memory unit is operable for storing a computer program for reducing  
8       the number of messages to be processed by said control processor;  
9             wherein said network processor, responsive to said computer program,  
10       comprises:  
11            circuitry operable for receiving a request to establish a TCP connection  
12       from a client;  
13            circuitry operable for establishing said TCP connection with said client  
14       via handshake messages between said network processor and said client;  
15            circuitry operable for receiving a request message from said client;  
16            circuitry operable for bundling said request message and information  
17       from said handshake messages involved in establishing said TCP connection; and  
18            circuitry operable for transmitting said bundled message to said  
19       control processor.

1       16.     The system as recited in claim 15, wherein said control processor, responsive  
2       to said computer program, comprises:  
3             circuitry operable for identifying a server in a server farm to service said  
4       client's request message;  
5             circuitry operable for bundling said client's request message and a control  
6       message; and  
7             circuitry operable for transmitting said bundled message comprising said  
8       client's request message and said control message to said network processor.

- 1       17.    The system as recited in claim 16, wherein said control message comprises
- 2       information used to enable said network processor to create entries in a forwarding
- 3       table to ensure packets from said client are transmitted to said server and to ensure
- 4       packets from said server are transmitted to said client.

1       18.     A load balancer, comprising:  
2             a network processor, wherein said network processor is configured to process  
3       fast path packets;  
4             a control processor coupled to said network processor, wherein said control  
5       processor is configured to process slow path packets; and  
6             a memory unit coupled to said control processor and said network processor,  
7       wherein said memory unit is operable for storing a computer program for reducing  
8       the number of messages to be processed by said control processor;  
9             wherein said network processor, responsive to said computer program,  
10       comprises:  
11            circuitry operable for receiving a request to establish a TCP connection  
12       from a client;  
13            circuitry operable for establishing said TCP connection with said client  
14       via handshake messages between said network processor and said client;  
15            circuitry operable for receiving a request message from said client;  
16            circuitry operable for bundling said request message and information  
17       from said handshake messages involved in establishing said TCP connection;  
18            circuitry operable for transmitting said bundled message to said  
19       control processor;  
20            circuitry operable for receiving a request to terminate said TCP  
21       connection from said server;  
22            circuitry operable for facilitating said termination of said connection  
23       between said server and said client;  
24            circuitry operable for bundling information regarding a series of closed  
25       connections; and  
26            circuitry operable for transmitting said bundled message regarding said  
27       series of closed connections to said control processor.

- 1       19.     The system as recited in claim 18, wherein said control processor comprises:
- 2               circuitry operable for extracting information from said bundled message
- 3     regarding said series of closed connections.